

REMARKS

After the foregoing amendment, claims 1 and 3-17, as amended, are pending in the application. Claim 1 has been amended to more particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claim 2 has been canceled. Applicants submit that no new matter has been added to the application by the Amendment.

Objection to the Specification

The Examiner objected to specification because of confusing language. Applicants have amended paragraph [0006] to make it clear that the emission of red light by the chip 21 is merely an example. Applicants have also amended paragraph [0056] to make paragraph [0056] more clear in its teaching that the use of neodymium oxide to absorb yellow light emitted by an incandescent lamp decreases the color rendering index Ra of the lamp. In view of the corrections to paragraphs [0006] and [0056], Applicants respectfully request the reconsideration and withdrawal of the objections to the specification.

Rejection - 35 U.S.C. § 103

The Examiner rejected claims 1-17 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. U.S. Patent No. 6,340,824 (Komoto *et al.*) in view of Applicants prior art admissions. Applicants respectfully traverse the rejection.

Applicants assert that the discussion in the background section of the specification constitutes admitted prior art only to the extent that JP 5-290818 teaches that the use of Nd in an incandescent light bulb actually decreases the color rendering index of the light bulb emissions and thus JP 5-290818 teaches that it would be futile to attempt to correct the color rendering of an LED with an Nd filter.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 103 rejection of claims 1-17.

Rejection - 35 U.S.C. § 103

The Examiner rejected claims 1-17 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. U.S. Patent No. 6,340,824 (Komoto *et al.*) in view of JP 5-290,818 ('818). Applicants respectfully traverse the rejection.

Komoto *et al.* discloses a light emitting device including a light emitting element (LED) which emits primary light at a first wavelength, and a wavelength converter which absorbs the primary light emitted by the LED and releases secondary light of a second wavelength different from the first wavelength. Komoto *et al.* teaches that by converting the primary light emission to the secondary light emission, the problems associated with unwanted changes of the emission wavelength of the LED due to variations of driving current, temperature and structural variations are avoided.

Komoto *et al.* also teaches that it is desirable to add an optical reflector (in three different embodiments) that passes light emitted by the wavelength converter and reflects the primary emissions of the LED back into the wavelength converter to increase the efficiency of the device. Komoto *et al.* also teaches adding an absorber for absorbing the primary light emission of the LED to prevent leakage of the primary light emission from the device.

Amended claim 1 recites:

An LED lamp comprising:

at least one LED chip, the emission of which has a peak wavelength in the range of 400 nm to 490 nm; and

a wavelength converting portion including a phosphor for transforming the emission of the LED chip into light having a longer wavelength than that of the emission,

wherein the LED lamp further includes filtering means, which is designed such that the spectral transmittance thereof becomes lower in at least a portion of the wavelength range of 550 nm to 605 nm than in the remaining visible radiation range.

Amended claim 1 describes an LED lamp comprising an LED chip emitting in a range of 400 to 490 nm, and a filtering means which has lower transmittance (i.e. higher attenuation) of emissions in a wavelength band that is longer than the wavelength of the emission of the LED chip.

Komoto *et al.* teaches attenuating the emissions from the LED. If the LED taught by Komoto *et al.* is assumed to emit in the range of 400-490 nm (in order to meet the first limitation of claim 1), then Komoto *et al.* must also teach that the reflector/absorber described by

Komoto *et al.* attenuates wavelengths in the range of 400-490 nm., since Komoto *et al.* teaches that the filter attenuates emissions from the LED. Consequently, Komoto *et al.* can not possibly teach or suggest filtering means designed such that the spectral transmittance thereof becomes lower (i.e. attenuation becomes higher) in at least a portion of the wavelength range of 550 nm to 605 nm than in the remaining visible radiation range as recited in amended claim 1. Note that if the wavelength of the LED were assumed to be other than 400-490 nm, for example 550-590 nm, in order that the filter could satisfy the last limitation of claim 1 (longer than a wavelength of the 400-490 nm), then the first limitation of claim 1 would not be met.

The Examiner further states that Komoto *et al.* does not teach that the color filter employed specifically may filter wavelengths in the 550-605 nm. range but the '818 patent teaches the use of Nd for filtering white light sources to decrease the transmittance of the yellow wavelengths and to increase the white light's color purity. The Examiner states that it would have been obvious to one of ordinary skill in the art at the time of the invention to have specifically employed Nd for Komoto *et al.*'s color filter.

To rely on a reference under 35 U.S.C. § 103, it must be analogous prior art. In order to be analogous art, the reference must either be in the field of the applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d, 1443, 1445 (Fed. Cir. 1992) MPEP 2141.01(a).

Applicants submit that the '818 patent is not analogous art. The '818 patent is directed to filtering the emissions of an incandescent lamp and not to filtering the emissions of an LED device. One skilled in the art would recognize that the emission spectra of an incandescent lamp is far different than an LED device having an LED emitting light with a wavelength of 400-490 nm and a wavelength converter. Consequently, one skilled in the art would expect far different results with the application of an Nd filter to the relatively discrete spectra of a fluorescent wave converter than to an incandescent lamp having a blackbody emission spectra. Applicants submit that the '818 is non-analogous art because: (1) the '818 is not in the field of active solid state devices (class 257) or (2) would not be reasonably pertinent to the particular problem other than to point out the failure of Nd to improve the Ra of an incandescent lamp.

It is well settled that when making a rejection under 35 U.S.C. § 103, the Examiner has the burden of establishing a *prima facie* case of obviousness. MPEP § 2142. The

Examiner can satisfy this burden only by showing an objective teaching in the prior art, or that knowledge generally available to one of ordinary skill in the art would lead the individual to combine the relevant teachings of the references in the manner suggested by the Examiner. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596, 1598, (Fed. Cir. 1988) MPEP § 2143.01.

Komoto *et al.* teaches filtering of the LED emissions and does not teach or suggest filtering of the fluorescent wavelength converter. The '818 patent teaches filtering of an incandescent light source and does not teach or suggest using Nd to filter the emission of a fluorescent wavelength converter. Accordingly, the prior art does not teach or suggest combining the references.

Further, the object of the present invention is to provide an LED device with improved color rendering properties (Page 4, lines 4-6). The '818 patent does not teach or suggest that Nd would increase the color rendering of an LED device. In fact, the '818 teaches that the Nd decreased the color rendering index of the light bulb emissions rather than increasing the color rendering index.

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959), MPEP §2143.01.

Amended claim 1 recites an LED chip with a peak wavelength in the range 400 nm to 490 nm, and filtering means which is designed such that the spectral transmittance is lower in a portion of the wavelength range of 550 nm to 605 nm than in the remaining visible radiation range. Komoto *et al.* teaches reflecting emissions from the LED in order to improve the efficiency of the wavelength converter or absorbing emissions of the LED to improve chromatic purity of the device. The '818 patent teaches filtering the emissions from the wavelength converter. Accordingly, the combination of Komoto *et al.* and the '818 would result in impermissibly changing the operation of Komoto *et al.* by filtering the wavelength converter and not the LED.

Applicants submit that the combination of Komoto *et al.* and the '818 patent does not make amended claim 1 obvious. Accordingly, for all the above reasons, Applicants respectfully request reconsideration and withdrawal of the §103 rejection of claim 1.

Further, it is respectfully submitted that since amended claim 1 has been shown to

Application No. 10/721,981
Reply to Office Action of Nov. 16, 2004

be allowable, claims 3-17 dependent on claim 1 are allowable, at least by their dependency. Accordingly, Applicants respectfully request reconsideration and withdrawal of the § 103 rejection of claims 3-17.

Conclusion

Insofar as the Examiner's objections and rejections have been fully addressed, the instant application, including claims 1 and 3-17, is in condition for allowance and Notice of Allowability of claims 1 and 3-17 is therefore earnestly solicited.

Respectfully submitted,

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